Research Journal of Pharmaceutical, Biological and Chemical Sciences, 2016, vol.7, N5, pages 1341-1346

Experimental: Thermochemical dehydration of oil sludges of different origins

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Abstract

The paper studied the breaking of highly stable oil-water and water-hydrocarbon emulsions of natural and technogenic origin. The main factors are specified which determine the stability and an increased resistance of emulsions to the traditional destruction methods. The effectiveness of thermochemical treatment on various water-oil and water-hydrocarbon emulsions was tested. The demulsifier Rekod-118A was selected as the main reagent used on fields for the destruction of highly stable water-oil emulsions. It was shown that among five provided samples only one sample reduced the content of water to the required standard level after a thermochemical dehydration. It was established that thermochemical dehydration method is generally ineffective for the destruction of highly stable water-oil emulsions and may serve only as the means of preliminary emulsion treatment. It was shown that after thermochemical exposure at 60 °C the water content in IL, HPR, YS emulsions remained at an original level and in MOCW emulsion the water content decreased by 14% and made 19% wt. After the dehydration by thermochemical method, only one sample (LP) out five ones demonstrated the water content reduction to the required standard of performance. Optimum reagent dosage for this raw material made 800 g/t and the process temperature made 60 °C with settling duration of 24 hours.

Keywords

Crude oil, Dehydration, Demulsifier, Thermochemical treatment, Water-oil and water-hydrocarbon emulsions